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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,992	07/24/2003	Wan-Thai Hsu	UOM 0210 PUSP 1	9892

22045 7590 07/12/2004

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EXAMINER
TSAI, H JEY

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/625,992	HSU ET AL.	
	Examiner	Art Unit	
	H.Jey Tsai	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,23 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/24/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Objections

Claim 23 is objected to because of the following informalities: "epoxy" should be "epitaxial". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-6 and 24 are rejected under 35 U.S.C. § 102(e) as being anticipated by Pai et al. 6,429,034.

Pai et al. discloses a method for making micromechanical structures having at least one lateral gap therebetween, the method comprising:

providing a substrate 12, fig. 1,

surface micromachining the substrate to form a first micromechanical structure having a first vertical sidewall (left hand side of layer 20) and a sacrificial spacer layer 34 on the first vertical sidewall 20, col. 2, lines 63+, fig. 3,

forming a second micromechanical structure on the substrate, the second micromechanical structure (right hand side of layer 20) including a second vertical

sidewall 24 separated from the first vertical sidewall (left hand side of layer 20) by the spacer layer 34, col. 3, lines 1+ and col. 4, lines 4, lines 48+,

removing the spacer layer 34 to form a first lateral gap between the first and second micromechanical structures (left hand side of layer 20 and right hand side of layer 20 after patterning and etching, col. 4, lines 58+),

forms a third vertical sidewall on the first micromechanical structure (one of vertical section layer 20/24) with the sacrificial spacer layer 34 and forming a third micromechanical structure 28 including a fourth vertical sidewall separated from the third vertical sidewall by the spacer layer 34 and wherein the step of removing further forms a second lateral gap between the first and third micromechanical structures (either left or right hand side of layer 20 and 28).

forming a plating metal layer 30,

froming conductive layer 20 with silicon, col. 3, lines 15+.

Claims 1-3, 5-6 and 24 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tsang 5,620,931.

Tsang discloses a method for making micromechanical structures having at least one lateral gap therebetween, the method comprising:

providing a substrate 30, fig. 14 and col. 19, lines 5+,

surface micromachining the substrate to form a first micromechanical structure

having a first vertical sidewall 64/62 and a sacrificial spacer layer 60 on the first vertical sidewall,

forming a second micromechanical structure on the substrate, the second micromechanical structure 58 including a second vertical sidewall separated from the first vertical sidewall 64/62 by the spacer layer 60, or the second micromechanical

structure is layer 68 in figure 20 including a second vertical sidewall separated from the first vertical sidewall 64/62 by the spacer layer 60, and micromechanical structure 58 including a second vertical sidewall is a third micromechanical structure,

removing the spacer layer 60 to form a first lateral gap between the first and second micromechanical structures 58, 64/62 after patterning and etching, figs. 15-23,

layer 68 is an electrode,

forming polysilicon layer, col. 13, lines 63+.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 7 and 23 are rejected under 35 U.S.C 103 as being unpatentable over Pai et al. as applied to claims 1-3, 5-6 and 24 above, and further in view of Eden et al. 6,347,237.

The difference between the references applied above and the instant claim(s) is: Pai et al. teaches forming a MEMS device and using submicron process but does not teach that resonator is a MEMS device and the gap is in submicron range and using epitaxial growth for forming conductive layer. However, Eden teaches at col. col. 6, lines 26+ and col. 10, lines 62+ that MEMS device includes resonators and gap can be in the submicron range and conductive layer can be formed with epitaxial growth.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings by using MEMS device as a resonator and forming gap at submicron range and using epitaxial growth to form a conductive layer as taught by Eden et al. because MEMS is a micromechanical structure with moving parts to response the vibration such as resonator and forming gap in submicron range to form a smaller resonator and epitaxial growth is a common method for forming conductive silicon layer that includes polysilicon layer.

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the Group customer service whose telephone number is (703) 308-4357.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679.

The fax phone number for this Group is (703) 872-9306.

hjt

7/8/04

H. Jey Tsai
Primary Examiner
Patent Examining Group 2800